

IN THE CLAIMS:

Cancel Claims 42-45.

Please add the following new claims:

46. (New) A semiconductor device comprising:

a thin film transistor formed over an insulating surface, the thin film transistor comprising:

a semiconductor film comprising crystalline silicon and having at least source and drain regions and a channel forming region;

a gate insulating film over the channel forming region; and

a gate electrode formed over the gate insulating film;

an interlayer insulating film formed over the thin film transistor;

a conductive layer formed over the interlayer insulating film and electrically connected to one of the source and drain regions of the thin film transistor;

a color filter formed over the interlayer insulating film and the conductive layer; and

a pixel electrode formed over the color filter and electrically connected to the conductive layer.

47. (New) A semiconductor device comprising:

a thin film transistor formed over an insulating surface, the thin film transistor comprising:

a semiconductor film comprising at least a channel forming region;

a gate insulating film adjacent to the channel forming region; and

a gate electrode adjacent to the gate insulating film,

an interlayer insulating film formed over the thin film transistor;  
a conductive layer formed over the interlayer insulating film and electrically connected to one of source and drain regions of the thin film transistor;  
a color filter formed over the interlayer insulating film and the conductive layer; and  
a pixel electrode formed over the color filter and electrically connected to the conductive layer.

48. (New) A semiconductor device comprising:

a thin film transistor formed over an insulating surface, the thin film transistor comprising:  
a semiconductor film comprising crystalline silicon and having at least source and drain regions and a channel forming region;

a gate insulating film adjacent to the channel forming region; and

a gate electrode adjacent to the channel forming region with the gate insulating film interposed therebetween;

an interlayer insulating film formed over the thin film transistor, the interlayer insulating film comprising at least a material selected from the group consisting of silicon nitride, silicon oxide and nitrated silicon oxide;

a color filter formed over the interlayer insulating film; and

a pixel electrode formed over the color filter,

wherein the pixel electrode is electrically connected to the thin film transistor.

49. (New) A device according to claim 48, wherein the gate electrode is located over the channel forming region.

50. (New) A semiconductor device comprising:

a thin film transistor formed over an insulating surface, the thin film transistor comprising:  
a semiconductor film comprising silicon and having at least a channel forming region;  
a gate insulating film adjacent to the channel forming region; and  
a gate electrode adjacent to the channel forming region with the gate insulating film interposed therebetween;

an interlayer insulating film formed over the thin film transistor, the interlayer insulating film comprising at least a material selected from the group consisting of silicon nitride, silicon oxide and nitrated silicon oxide;

a color filter formed over the interlayer insulating film; and  
a pixel electrode formed over the color filter.

51. (New) A device according to claim 50, wherein the gate electrode is located over the channel forming region.

52. (New) A semiconductor device comprising:

a thin film transistor formed over an insulating surface, the thin film transistor comprising:  
a semiconductor film comprising crystalline silicon and having at least source and drain regions and a channel forming region;  
a gate insulating film adjacent to the channel forming region; and  
a gate electrode formed adjacent to the channel forming region with the gate insulating film interposed therebetween;  
a first interlayer insulating film formed over the thin film transistor;

a conductive layer formed over the first interlayer insulating film and electrically connected to one of the source and drain regions of the thin film transistor;

a second interlayer insulation film formed over the conductive layer, the second interlayer insulating film comprising at least a material selected from the group consisting of silicon nitride, silicon oxide and nitrated silicon oxide;

a color filter formed over the second interlayer insulating film; and

a pixel electrode formed over the color filter and electrically connected to the conductive layer.

53. (New) A device according to claim 52, wherein the gate electrode is located over the channel forming region.

54. (New) A semiconductor device comprising:

a thin film transistor formed over a substrate, the thin film transistor comprising:

a semiconductor film comprising silicon and having at least a channel forming region;

a gate insulating film adjacent to the channel forming region; and

a gate electrode adjacent to the channel forming region with the gate insulating film interposed therebetween;

a first interlayer insulating film formed over the thin film transistor;

a conductive layer formed over the first interlayer insulating film and electrically connected to one of the source and drain regions of the thin film transistor;

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a second interlayer insulating film formed over the conductive layer, the second interlayer insulating film comprising at least a material selected from the group consisting of silicon nitride and nitrated silicon oxide;

a color filter formed over the second interlayer insulating film; and

a pixel electrode formed over the color filter and electrically connected to the conductive layer.

55. (New) A device according to claim 54, wherein the gate electrode is located over the channel region.

56. (New) A semiconductor device comprising:

a thin film transistor formed over an insulating surface, the thin film transistor comprising:

a semiconductor film comprising:

a channel forming region;

LDD regions in contact with the channel forming region; and

a source region and a drain region in contact with the LDD regions;

a gate insulating film adjacent to the channel forming region; and

a gate electrode adjacent to the gate insulating film;

an interlayer insulating film formed over the thin film transistor;

a conductive layer formed over the interlayer insulating film and electrically connected to one of source and drain regions of the thin film transistor;

a color filter formed over the interlayer insulating film and the conductive layer; and

a pixel electrode formed over the color filter and electronically connected to the conductive layer.

57. (New) A semiconductor device comprising:

a thin film transistor formed over an insulating surface, the thin film transistor comprising:

a semiconductor film comprising silicon comprising:

a channel forming region;

LDD regions in contact with the channel forming region; and

a source region and a drain region in contact with the LDD regions;

a gate insulating film adjacent to the channel forming region; and

a gate electrode adjacent to the channel forming region with the gate insulating film interposed therebetween;

an interlayer insulating film formed over the thin film transistor, the interlayer insulating film comprising at least a material selected from the group consisting of silicon nitride, silicon oxide and nitrated silicon oxide;

a color filter formed over the interlayer insulating film; and

a pixel electrode formed over the color filter.

58. (New) A semiconductor device comprising:

a thin film transistor formed over an insulating surface, the thin film transistor comprising:

a semiconductor film comprising silicon comprising:

a channel forming region;

LDD regions in contact with the channel forming region; and

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Unit

a source region and a drain region in contact with the LDD regions;  
a gate insulating film adjacent to the channel forming region; and  
a gate electrode adjacent to the channel forming region with the gate insulating film interposed therebetween;

a first interlayer insulating film formed over the first thin film transistor;  
a conductive layer formed over the first interlayer insulating film and electrically connected to one of source and drain regions of the thin film transistor;

a second interlayer insulating film formed over the conductive layer, the second interlayer insulating film comprising at least a material selected from the group consisting of silicon nitride and nitrated silicon oxide;

a color filter formed over the second interlayer insulating film; and  
a pixel electrode formed over the color filter and electrically connected to the conductive layer.

59. (New) A semiconductor device comprising:

a pixel matrix circuit comprising:

a first thin film transistor comprising:

a semiconductor film comprising at least a channel forming region;  
a gate insulating film adjacent to the channel forming region; and  
a gate electrode adjacent to the channel forming region with the gate insulating film interposed therebetween;

an interlayer insulating film formed over the first thin film transistor;

a conductive layer formed over the interlayer insulating film and electrically connected to one of source and drain regions of the first thin film transistor;

a color filter formed over the interlayer insulating film and the conductive layer;

a pixel electrode formed over the color filter and electrically connected to the conductive layer;

a driver circuit comprising a second thin film transistor,

wherein the pixel matrix circuit and the driver circuit are over a same substrate.

60. (New) A semiconductor device comprising:

a pixel matrix circuit comprising:

a first thin film transistor comprising:

a semiconductor film comprising silicon and having at least a channel forming region;

a gate insulating film adjacent to the channel forming region; and

a gate electrode adjacent to the channel forming region with the gate insulating film interposed therebetween;

an interlayer insulating film formed over the first thin film transistor, the interlayer insulating film comprising at least a material selected from the group consisting of silicon nitride, silicon oxide and nitrated silicon oxide;

a color filter formed over the interlayer insulating film; and

a pixel electrode formed over the color filter;

a driver circuit comprising a second thin film transistor;

wherein the pixel matrix circuit and the driver circuit are over the same substrate.

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Circuit



61. (New) A semiconductor device comprising:

a pixel matrix circuit comprising:

a first thin film transistor comprising:

a semiconductor film comprising silicon and having at least a channel forming region;

a gate insulating film adjacent to the channel forming region; and

a gate electrode adjacent to the channel forming region with the gate insulating film interposed therebetween;

a first interlayer insulating film formed over the first thin film transistor;

a conductive layer formed over the first interlayer insulating film and electrically connected to one of the source and drain regions of the first thin film transistor;

a second interlayer insulating film formed over the conductive layer, the second interlayer insulating film comprising at least a material selected from the group consisting of silicon nitride and nitrated silicon oxide;

a color filter formed over the second interlayer insulating film; and

a pixel electrode formed over the color filter and electrically connected to the conductive layer;

a driver circuit comprising a second thin film transistor,

wherein the pixel matrix circuit and the driver circuit are over the same substrate.

62. (New) A device according to claim 56, wherein the semiconductor film comprises crystalline silicon.

63. (New) A device according to claim 57, wherein the semiconductor film comprises crystalline silicon.

64. (New) A device according to claim 58, wherein the semiconductor film comprises crystalline silicon.

65. (New) A device according to claim 59, wherein the semiconductor film comprises crystalline silicon.

66. (New) A device according to claim 60, wherein the semiconductor film comprises crystalline silicon.

67. (New) A device according to claim 61, wherein the semiconductor film comprises crystalline silicon.

68. (New) A device according to claim 46, wherein the semiconductor device further comprising:

a resin film over the color filter;

a first electrode over the organic resin film; and

an oxide film of the first electrode in direct contact with at least a portion of a surface of the first electrode,

wherein the pixel electrode is in direct contact with at least a portion of the oxide film, and

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wherein a storage capacitor comprises the first electrode and the second electrode with the oxide film interposed therebetween.

69. (New) A device according to claim 48, wherein the semiconductor device further comprising:

a resin film over the color filter;

a first electrode over the organic resin film; and

an oxide film of the first electrode in direct contact with at least a portion of a surface of the first electrode,

wherein the pixel electrode is in direct contact with at least a portion of the oxide film, and

wherein a storage capacitor comprises the first electrode and the second electrode with the oxide film interposed therebetween.

70. (New) A device according to claim 52, wherein the semiconductor device further comprising:

a resin film over the color filter;

a first electrode over the organic resin film; and

an oxide film of the first electrode in direct contact with at least a portion of a surface of the first electrode,

wherein the pixel electrode is in direct contact with at least a portion of the oxide film, and

wherein a storage capacitor comprises the first electrode and the second electrode with the oxide film interposed therebetween.